SYBASE®
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Tutorial: Mobile Business Object Development

Sybase Unwired Platform 2.1 ESD #2

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Sybase Unwired Platform Tutorials

The Sybase® Unwired Platform tutorials demonstrate how to develop, deploy, and test mobile business objects, device applications, and mobile workflow packages. You can also use the tutorials to demonstrate system functionality and train users.

Tip: If you want to see the final outcome of a tutorial without performing the steps, the associated example project is available on SAP® SDN: *http://www.sdn.sap.com/irj/sdn/mobile?rid=/webcontent/uuid/40ea4956-b95c-2e10-11b3-e68c73b2280e*.

- Learn mobile business object (MBO) basics, and use this tutorial as a foundation for the Object API application development tutorials:
  - *Tutorial: Mobile Business Object Development*
- Create native Object API mobile device applications:
  - *Tutorial: Android Object API Application Development*
  - *Tutorial: BlackBerry Object API Application Development*
  - *Tutorial: iOS Object API Application Development*
  - *Tutorial: Windows Mobile Object API Application Development*
- Create a mobile business object, then develop a mobile workflow package that uses it:
  - *Tutorial: Mobile Workflow Package Development*

Task Flow

Use this tutorial to develop and deploy mobile business objects (MBOs). You can then use these MBOs to complete the Object API application development tutorials.

Task	Goals	Steps
Getting started	• Install Sybase Mobile SDK and Sybase Unwired Platform Runtime. • Start Unwired Server and other platform services, if not already started. • Start Sybase Control Center. • Start Sybase Unwired WorkSpace, open the Mobile Development perspective, and become familiar with the views of the perspective and the Mobile Application Diagram.	• Installing Sybase Unwired Platform • Starting Unwired Platform Services • Starting Sybase Unwired WorkSpace • (Optional) Connecting to Sybase Control Center • (Optional) Learning Unwired WorkSpace Basics
Developing database mobile business objects	• Create a mobile application project and a connection to the database. • Create two mobile business objects, and create a relationship between them. • Deploy the mobile business objects to Unwired Server.	• Connecting to the Sample Database • Creating the SUP101 Mobile Application Project • Creating Database Mobile Business Objects • Creating a Relationship Between Mobile Business Objects • Deploying the Database Mobile Business Objects

Getting Started with Unwired Platform

Install and learn about Sybase Unwired Platform and its associated components.

Complete the following tasks for all tutorials, but you need to perform them only once.

1. *Installing Sybase Unwired Platform*

   Install Sybase Mobile SDK and Sybase Unwired Platform Runtime.
2. *Starting Sybase Unwired Platform Services*

   Start Unwired Server, Sybase Control Center, the sample database, the cache database (CDB), and other essential services.
3. *Starting Sybase Unwired WorkSpace*

   Start the development environment, where you can perform tasks that include creating mobile business objects (MBOs), managing database and server connections, developing Mobile Workflow applications, and generating Object API code.
4. *Connecting to Sybase Control Center*

   Open the Sybase Control Center administration console to manage Unwired Server and its components.
5. *Learning Unwired WorkSpace Basics*

   Sybase Unwired WorkSpace features are well integrated in the Eclipse IDE. If you are not familiar with Eclipse, you can quickly learn the basic layout of Unwired WorkSpace and the location of online help.

Installing Sybase Unwired Platform

Install Sybase Mobile SDK and Sybase Unwired Platform Runtime.

Before starting this tutorial, be sure you have all the requisite Unwired Platform components installed. For complete installation instructions, see the Sybase Unwired Platform documentation at *http://sybooks.sybase.com/nav/summary.do?prod=1289*.

- *Release Bulletin for Sybase Mobile SDK*
- *Installation Guide for Sybase Mobile SDK*
- *Release Bulletin for Runtime*
- *Installation Guide for Runtime*

1. Install these Unwired Platform Runtime components:
   - Data Tier (included with single-server installation)
   - Unwired Server
2. Install Mobile SDK, which includes:

- Development support for Native Object API applications, HTML5/JS Hybrid (Mobile Workflow) applications, and OData SDK applications.
- Sybase Unwired WorkSpace, the Eclipse-based development environment for MBOs and mobile workflows.

Starting Sybase Unwired Platform Services

Start Unwired Server, Sybase Control Center, the sample database, the cache database (CDB), and other essential services.

How you start Unwired Platform services depend on the options you selected during installation. In some cases, you may need to manually start Unwired Platform services.
Select **Start > Programs > Sybase > Unwired Platform > Start Unwired Platform Services**.
The Unwired Server services enable you to access the Unwired Platform runtime components and resources.

Starting Sybase Unwired WorkSpace

Start the development environment, where you can perform tasks that include creating mobile business objects (MBOs), managing database and server connections, developing Mobile Workflow applications, and generating Object API code.
Select **Start > Programs > Sybase > Unwired Platform > Unwired WorkSpace**.
The Sybase Unwired WorkSpace opens in the Mobile Development perspective. The Welcome page displays links to the product and information.

Next

To read more about Unwired WorkSpace concepts and tasks, select **Help > Help Contents**.

Connecting to Sybase Control Center

Open the Sybase Control Center administration console to manage Unwired Server and its components.

From Sybase Control Center, you can:

- View servers and their status
- Start and stop a server
- View server logs
- Deploy a mobile application package
- Register application connections
- Set role mappings

For information on configuring, managing, and monitoring Unwired Server, click **Help** > **Online Documentation**.

1. Select **Start** > **Programs** > **Sybase** > **Sybase Control Center**.

   Note: If the Sybase Control Center service does not open, make sure that the service is started. See the *Installation Guide for Runtime*.

2. In Sybase Control Center, log in by entering the credentials set during installation.

   Sybase Control Center gives you access to the Unwired Platform administration features that you are authorized to use.

Learning Unwired WorkSpace Basics

Sybase Unwired WorkSpace features are well integrated in the Eclipse IDE. If you are not familiar with Eclipse, you can quickly learn the basic layout of Unwired WorkSpace and the location of online help.

- To access the online help, select **Help** > **Help Contents**. Some documents are for Sybase Unwired Platform, while others are for the Eclipse development environment.
- The Welcome page provides links to useful information to get you up and running.
  - Reopen the Welcome page by selecting **Help** > **Welcome**.
  - To close the Welcome page, click **X**.
  - To learn about tasks you must perform, select the **Development Process** icon.
- In Unwired WorkSpace, look at the area (window or view) that you will use to access, create, define, and update mobile business objects (MBOs).

Window	Description
WorkSpace Navigator view	Use this view to create Mobile Application projects, and review and modify MBO-related properties. This view displays mobile application project folders, each of which contains all project-related resources in subfolders, including MBOs, datasource references to which the MBOs are bound, personalization keys, and so on.
Enterprise Explorer view	A view that provides functionality to connect to various enterprise information systems (EIS), such as database servers, SAP® back ends, and Unwired Server.

Window	Description
Mobile Application Diagram	The Mobile Application Diagram is a graphical editor where you create and define mobile business objects. Use the Mobile Application Diagram to create MBOs (including attributes and operations), then define relationships with other MBOs. You can: • Create MBOs in the Mobile Application Diagram using Palette icons and menu selections – either bind or defer binding to a data source, when creating an MBO. For example, you may want to model your MBOs before creating the data sources to which they bind. This MBO development method is sometimes referred to as the top-down approach. • Drag items from Enterprise Explorer and drop them (drag and drop) onto the Mobile Application Diagram to create the MBO – quickly creates the operations and attributes automatically based on the datasource artifact being dropped on the Mobile Application Diagram. Each new mobile application project generates an associated mobile application diagram.
Palette	The Palette is accessed from the Mobile Application Diagram and provides controls, such as the ability to create MBOs, add attributes and operations, and define relationships, by dragging-and-dropping the corresponding icon onto the Mobile Application Diagram or existing MBO.
Properties view	Select an object in the Mobile Application Diagram to display and edit its properties in the Properties view. While you cannot create an MBO from the Properties view, most development and configuration is performed here.
Outline view	Displays an outline of the active file and lists structural elements. The contents are editor-specific.
Problems view	Displays problems, errors, or warnings that you may encounter. This is a valuable source for collecting troubleshooting information.

Window	Description
Error Log view	Displays error log information. This is a valuable source for collecting troubleshooting information.

Developing Database Mobile Business Objects

You will develop two samples of mobile business objects to see how they form the business logic for mobile applications. You create two mobile business objects, each using a database as its datasource, create a relationship between the two MBOs, and deploy them to Unwired Server. You also use the deployed project in the Object API application development tutorials.

Prerequisites

Complete the tasks in *Getting Started*.

Task

Develop the database mobile business objects by completing the following tasks, in order. Each task has its own section with descriptions and detailed steps for you to create and deploy a project.

1. *Connecting to the Sample Database*

   Use the default database connection profile to test and connect to the sample database.
2. *Creating the SUP101 Mobile Application Project*

   Create a mobile application project to store the mobile business objects and resources you are developing.
3. *Creating Database Mobile Business Objects*

   Create two mobile business objects, each from a database object.
4. *Creating a Relationship Between Mobile Business Objects*

   Create a relationship between mobile business objects to associate related data and maintain data synchronization on the application device.
5. *Deploying the Database Mobile Business Objects*

   Deploy the project that contains the database mobile business objects to the Unwired Server.

Connecting to the Sample Database

Use the default database connection profile to test and connect to the sample database.

Installing Sybase Unwired Platform also installs a sample database, `sampledb`, which you can use to create and test mobile business objects (MBOs). A default connection profile (My Sample Database), included with the installation, is configured to access the Sample database (`sampledb`).

Sybase Unwired Platform Services can start the database automatically, depending on your license type: the Sybase Unwired Platform Development Edition normally starts the database

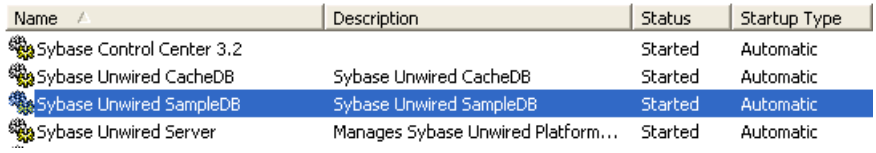
automatically; however, if you are running Deployment Edition or Personal Edition, you must start the database manually.

In this task you start the database, if necessary, then connect to the sample database using the default connection profile. This task is required for all tutorials, but you need to perform it only once.

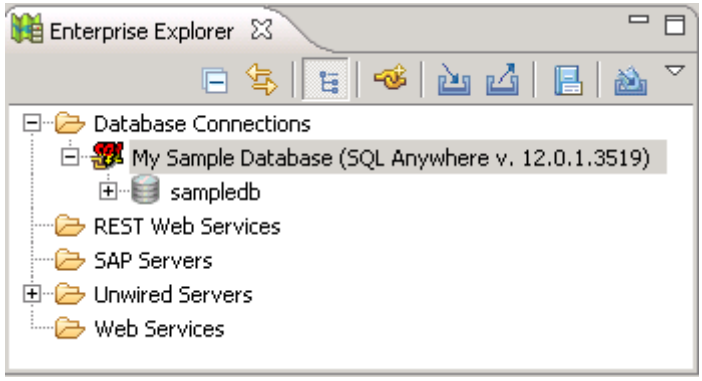
1. Select **Start > Programs > Sybase > Unwired Platform > Unwired WorkSpace**.
2. In Enterprise Explorer, expand **Database Connections**.
3. Right-click **My Sample Database** and select **Ping**.
   - If the ping succeeds, click **OK** and go to Step 4.
   - If the ping fails, go to the next step to correct the problem.

   Note: Ping confirms whether the sample profile can connect to the sample database.
4. If the ping fails, verify that Unwired Platform Services, including the Sybase Unwired SampleDB, are running:
   a) On your Windows desktop, open the Services window.
   For example (using the the Windows XP Classic View), select **Start > Settings > Control Panel**. In the Control Panel, double-click **Administrative Tools**, then double-click **Services**.

   Your installation options (for example, license type, whether or not you installed a cluster, and so on) determine which Sybase services are running.

   b) In the Services window, check the Status column of the Sybase Unwired SampleDB service. If the status is not Started, right-click the service and select **Start**.
   c) Go back to Step 2.
5. Right-click **My Sample Database** and select **Connect**.
   In Enterprise Explorer, the My Sample Database folder contains the `sampledb` database.

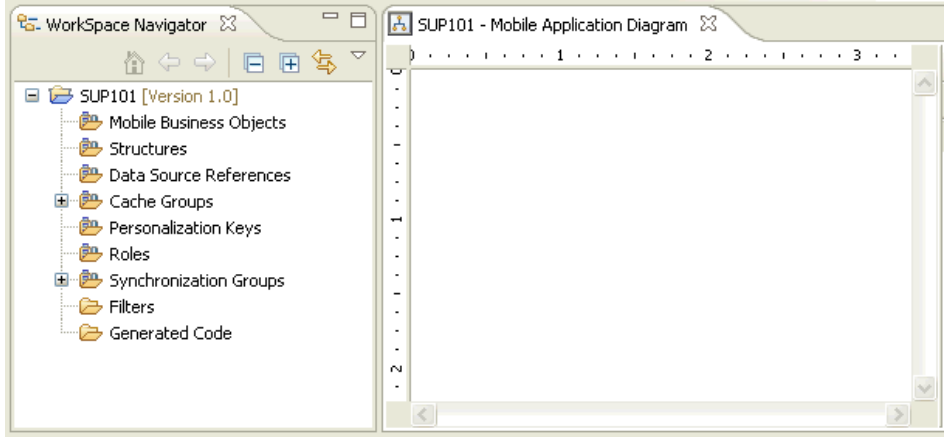


Creating the SUP101 Mobile Application Project

Create a mobile application project to store the mobile business objects and resources you are developing.

Several of the Object API application development tutorials use the objects created in this SUP101 mobile application project.

1. Select **File > New > Mobile Application Project** to create the project.
2. In the New Mobile Application Project wizard, enter `SUP101` as the Project Name and click **Finish**.
   The SUP101 project is added to the WorkSpace Navigator and opens in the Mobile Application Diagram.



3. Right-click in the Mobile Application Diagram and verify the Switch Developer Profile is set to Advanced. If the profile was set to Basic, select **Advanced** and click **Yes**.

   Unwired WorkSpace provides two developer profiles: Basic and Advanced. The default Basic profile provides most of the features you need; however, the tutorial requires

additional features, such as configuring code generation, that the Advanced profile provides.

Creating Database Mobile Business Objects

Create two mobile business objects, each from a database object.

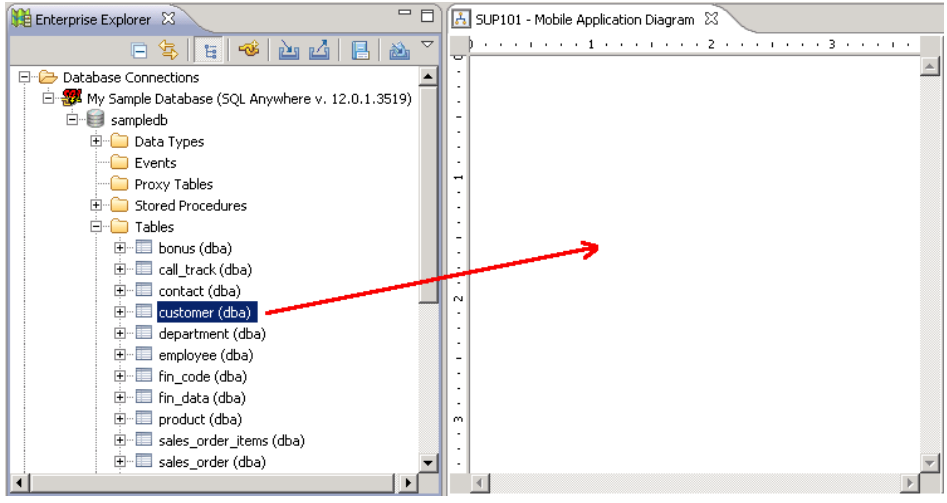
Prerequisites

- *Connecting to the Sample Database* on page 11
- *Creating the SUP101 Mobile Application Project* on page 13

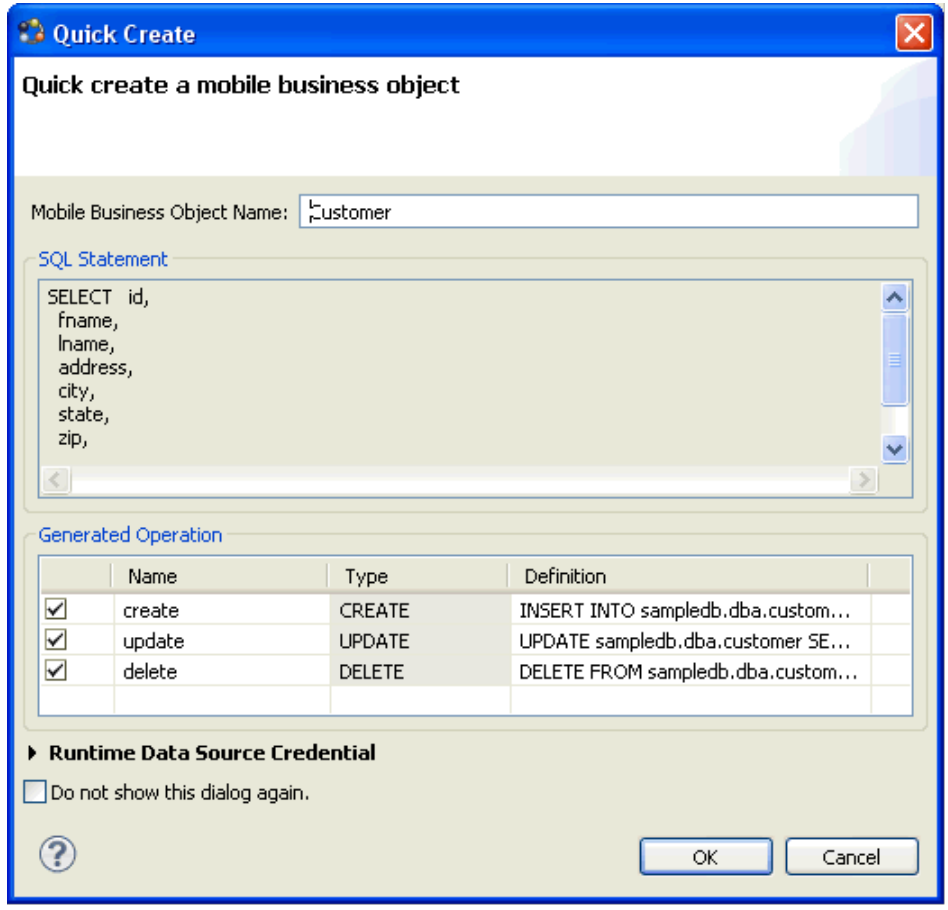
Task

1. Open the SUP101 mobile application project if it is not already open:

   In WorkSpace Navigator, right-click the `SUP101` folder and select **Open in Diagram Editor**.
2. In Enterprise Explorer, expand `Database Connections\My Sample Database`. If the `sampledb` database folder is not listed, right-click `My Sample Database` and select **Connect**. Enter `SQL` as the password if prompted.
3. Expand `sampledb\Tables`.
4. Drag the `customer` table from the Enterprise Explorer to the Mobile Application Diagram.

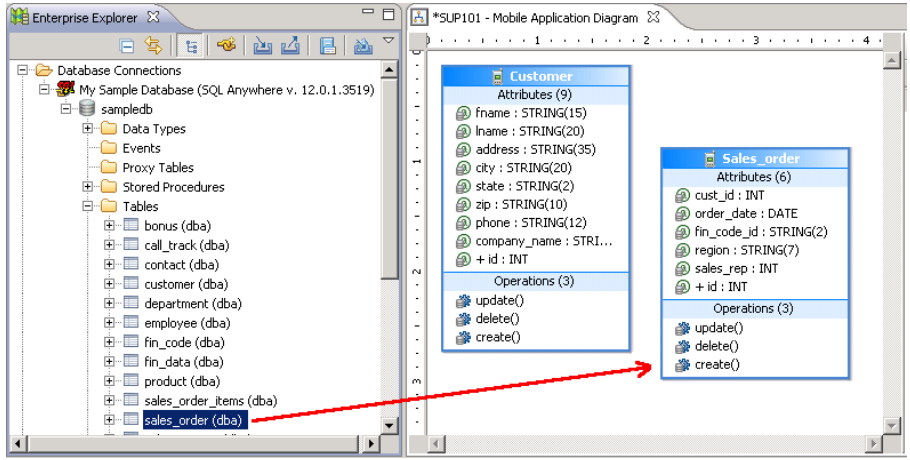


5. In the Quick Create wizard, accept the defaults and click **OK**.



6. Create another MBO from the `sales_order` table:
   a) Drag the `sales_order` table from Enterprise Explorer to the Mobile Application Diagram.
   b) In the Quick Create wizard, accept the defaults and click **OK**.

      The Mobile Application Diagram displays the Customer and Sales_order MBOs.



7. Select **File > Save**.

Creating a Relationship Between Mobile Business Objects

Create a relationship between mobile business objects to associate related data and maintain data synchronization on the application device.

Prerequisites

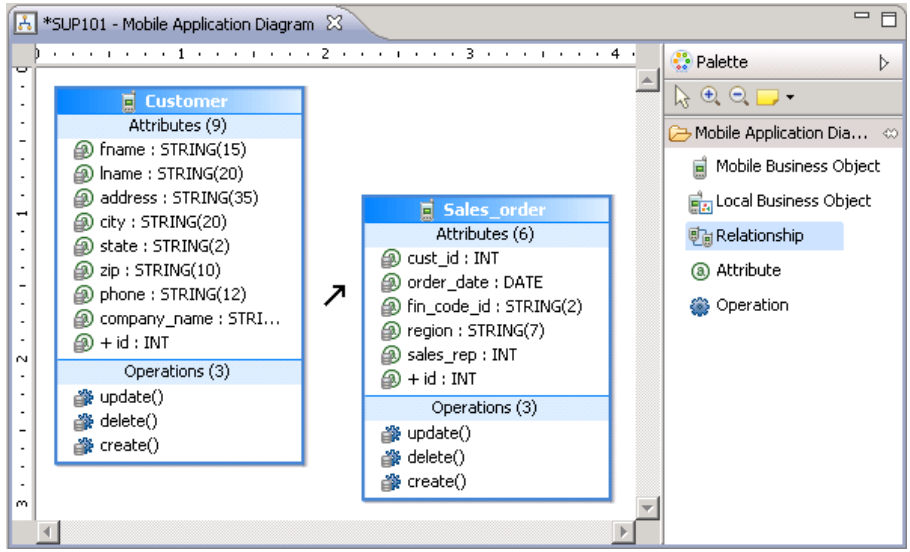
Creating Database Mobile Business Objects on page 14

Task

You create a relationship between the Customer and Sales_order MBOs.

1. Create a link between the two MBOs:
   a) In the Palette, select **Relationship**.

      When you hover over any part of the Mobile Application Diagram, the cursor changes to a relationship arrow. If the cursor does not change, select **Relationship** again.



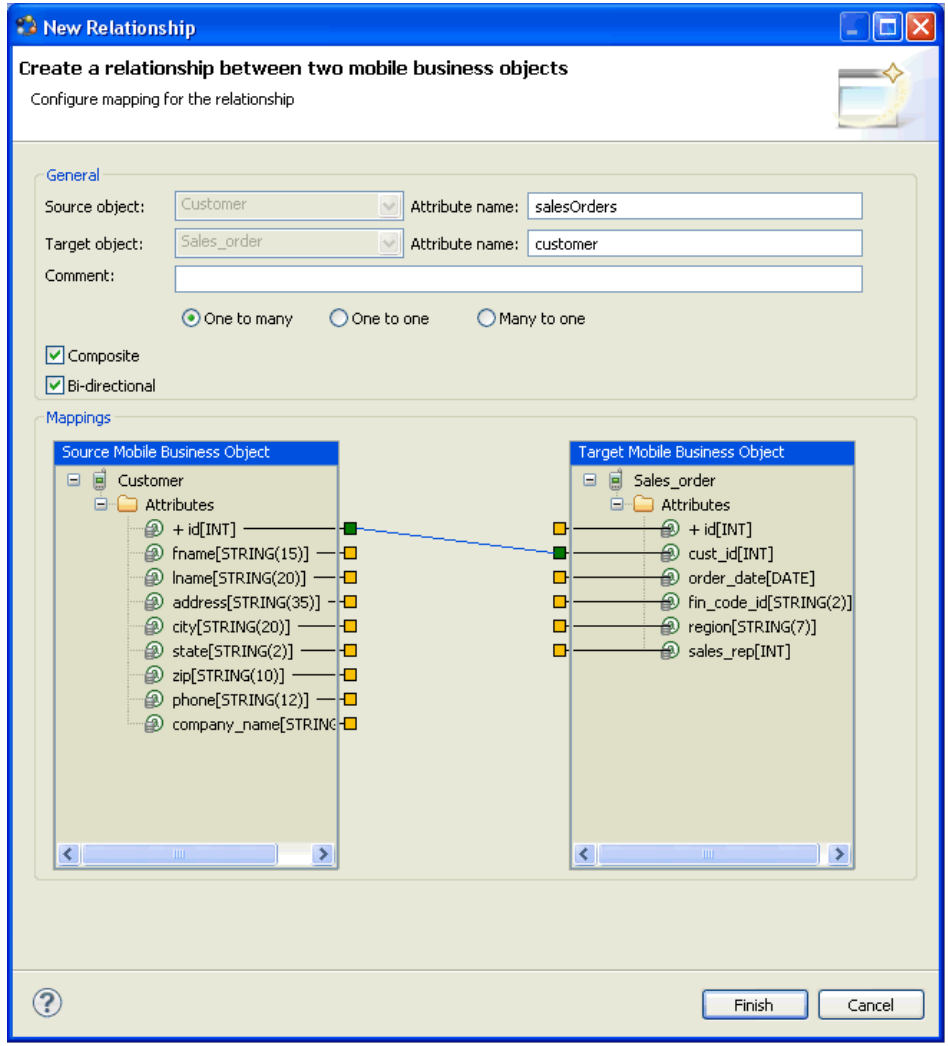
b) In the Mobile Application Diagram, drag the mouse from the Customer MBO to the Sales_order MBO to draw a relationship link.

2. In the New Relationship wizard, define the relationship between the MBOs:

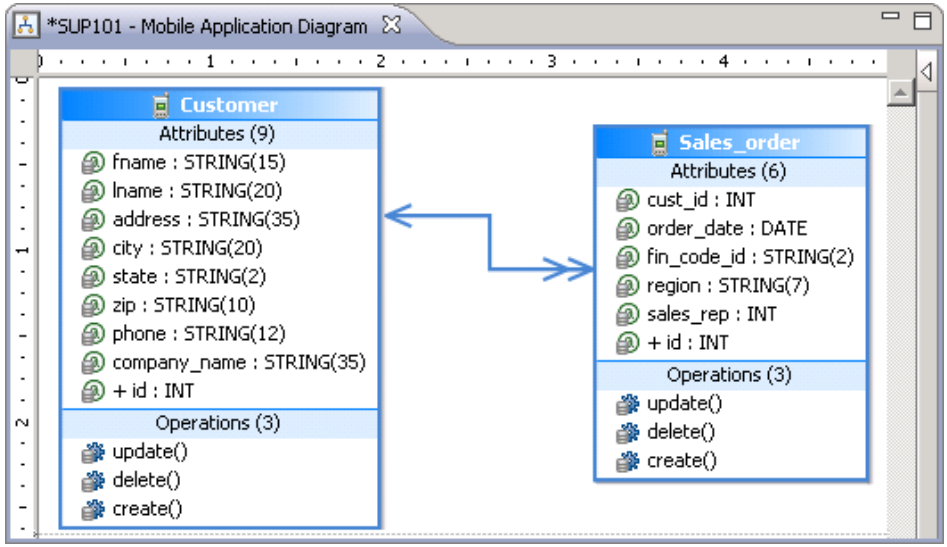
a) In the General section, accept the default settings.

b) In the Mappings section, drag the mouse to draw a line from the **id** attribute in the Source Mobile Business Object to the **cust_id** attribute in the Target Mobile Business Object.

Alternatively, click each attribute in turn to draw the line.



3. Click **Finish** to close the New Relationship wizard.
   In the Mobile Application Diagram, a line connects the Customer and Sales_order MBOs to show they are related objects. Different types of arrows show different relationship types, in this case, one-to-many and bi-directional relationships. You can double-click the objects to see the Attributes in the Properties view.



4. Select **File** > **Save**.

Deploying the Database Mobile Business Objects

Deploy the project that contains the database mobile business objects to the Unwired Server.

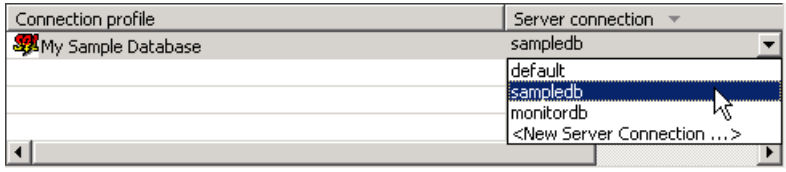
Prerequisites

- Unwired Server and related services must be started and running. If they are not, see *Getting Started* on page 5
- *Creating Database Mobile Business Objects* on page 14

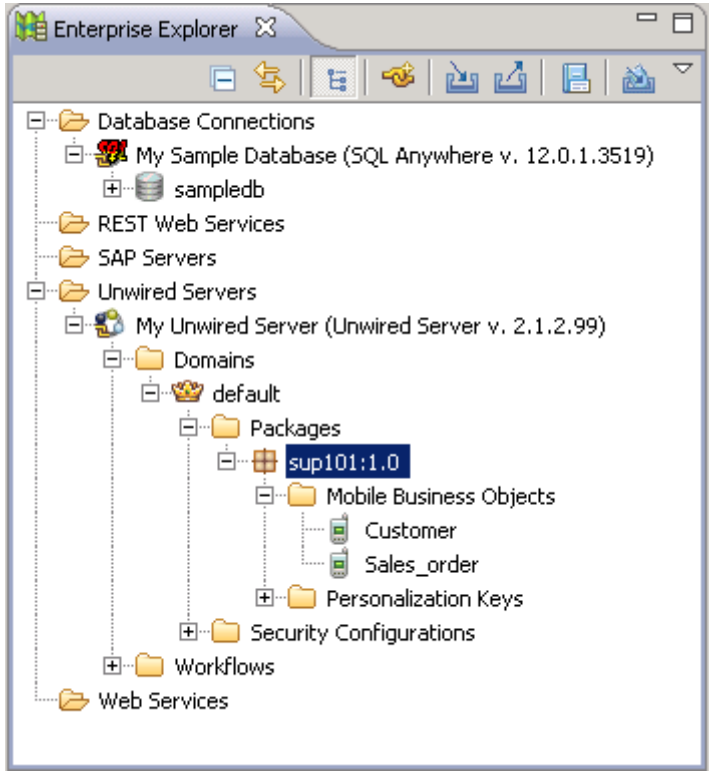
Task

1. Right-click in the SUP101 Mobile Application Diagram and select **Deploy Project**.
2. In the Deploy Mobile Application Project wizard, accept the defaults and click **Next**.
3. In the Contents window, verify the Customer and Sales_order MBOs are selected. Click **Next**.
4. In the Package User-defined Classes window, click **Next**.
5. In the Target Server window, select **My Unwired Server** from the list of available servers, then click **Connect**.
6. Accept the default Domain and Security configuration settings, and click **Next**.
7. In the Deploy Application to Server window, accept the default application ID and click **Next**.

8. In the Server Connection Mapping window, choose a Server connection for the My Sample Database Connection profile:
   - If the runtime database connection is on your local machine, select **My Sample Database** then **sampledb**.
   - If the runtime database connection is on a remote machine, select **My Sample Database** then **New Server Connection**, which allows you to create a connection from an existing template.



9. Click **Next**.
10. In the Save as a Deployment Profile, accept the default settings and click **Finish** to close the Deploy Mobile Application Project wizard.
    The Executing Deployment window closes when the deployment finishes.
11. In the Deployment Status window, click **OK**.
12. In Enterprise Explorer, you can see the deployed project in **Unwired Servers > My Unwired Server > Domains > default > Packages > sup101:1.0**. The two MBOs you deployed are in the `Mobile Business Objects` subfolder.



The MBOs are now available for access by device applications or for deploying in a production environment. You will use this project in other Object API application development tutorials.

Learn More About Sybase Unwired Platform

Once you have finished, try some of the other samples or tutorials, or refer to other development documents in the Sybase Unwired Platform documentation set.

Check the Sybase Product Documentation Web site regularly for updates: *http://sybooks.sybase.com/nav/summary.do?prod=1289*, then navigate to the most current version.

Tutorials

Try out some of the other getting started tutorials available on Product Documentation to get a broad view of the development tools available to you.

Example Projects

Example projects are available for download, if you want the finished tutorial without going through the steps. Download example projects from: *http://www.sdn.sap.com/irj/sdn/mobile?rid=/webcontent/uuid/40ea4956-b95c-2e10-11b3-e68c73b2280e*.

Samples

Sample applications are fully developed, working applications that demonstrate the features and capabilities of Sybase Unwired Platform.

Check the SAP® Development Network (SDN) Web site regularly for new and updated samples: *https://cw.sdn.sap.com/cw/groups/sup-apps*.

Online Help

See the online help that is installed with the product, or the Product Documentation Web site.

Developer Guides

Learn best practices for architecting and building device applications:

- *Mobile Data Models: Using Data Orchestration Engine* – provides information about using Sybase Unwired Platform features to create DOE-based applications.
- *Mobile Data Models: Using Mobile Business Objects* – provides information about how to develop mobile business objects (MBOs) to fully maximize their potential.

Learn about using the API to create device applications:

- *Developer Guide: Android Object API Applications*
- *Developer Guide: BlackBerry Object API Applications*
- *Developer Guide: iOS Object API Applications*
- *Developer Guide: Windows and Windows Mobile Object API Applications*
- *Developer Guide: Mobile Workflow Packages*

Customize and automate:

- *Developer Guide: Unwired Server Management API* – customize and automate system administration features.

Javadoc and HeaderDoc are also available in the installation directory.

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